

1. Bits Available for General Use

Fields specified by the Standard are listed in Table A; General Use fields are indicated in bold type. A description of each General Use field is presented in the paragraphs following Table A.

The procedures and definitions of how to measure the containers' physical characteristics specified in Table A are documented by the International Standards Organization.

Table A: Data Field Descriptions for the Container Tag

Entry	Bits Required	Tag Data Sequence	Minimum Value	Maximum Value	Units
Equipment Group Code	5	0-4	0	31	Type Code
Tag Type	2	5-6	1	4	Type Code
Owner's Code (Initial)	19	7-25	A	ZZZZ	Alpha
Identification Number	20	26-45	0	999999	Numeric
Check Digit	4	46-49	0	9	Numeric
Length	11	50-59,64	0	2000	Centimeters
First Check Sum	2	60-61			
Reserved Frame Marker	2	62-63			
Height	9	65-73	0	500	Centimeters
Width	7	74-80	200	300	Centimeters
Container Type Code	7	81-87	0	127	Type Code
Max. Gross Weight	9	88-96	45	455	100's of Kg.
Tare Weight	7	97-103	0	91	100's of Kg.
Spare	2	104-105	Reserved Reserved for Security or limited Owner's use		
Security	12	106-117			
Data Format Code	6	118-123			
Second Check Sum	2	124-125			
Frame Marker	2	126-127			

The fields are arranged in a hierarchical fashion in order to expedite translation and processing by the data processor. It is intended that the data processor will first look at the Data Format Code to determine if the Tag should be decoded or ignored. For example, in some cases the data processor will wish to ignore all Tags except those specified as highway (ATA Standard) or marine intermodal (ISO Standard) Tags.

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Once the Data Format Code has been processed, then the data processor will look to the Tag Type to determine the configuration, capabilities, and memory capacity of the Tag. (Note: This field is provided for future use to accommodate new types of Tags which may have different memory or communication capabilities).

Next, the data processor will examine the Equipment Group Code to determine if the tagged equipment is relevant. For example, the processor may ignore, or process differently, non-revenue equipment than it would chassis or containers.

The order in which the remaining fields are processed will be dictated by the particular application.

1.1 Equipment Group Code: This is a numeric field having a value from 0 to 31 that indicates the general type of equipment. A proposed table of values for this field is indicated below. Note that only major categories of equipment types are indicated in this field and other fields are allotted to indicate further details. The Equipment Group Code for a container is decimal 10 (binary 01010).

Table B: Data Values for the Equipment Group Code

<u>Value</u>	<u>Description</u>	<u>Value</u>	<u>Description</u>
0	Other	16	Reserved
1	Reserved	17	Tractor (Power Only)
2	Reserved	18	Truck (Power and Cargo Bed)
3	Reserved	19	Railcar
4	Reserved	20	Dolly
5	Locomotive	21	Trailer
6	End-of-Train Device	22	Reserved
7	Reserved	23	Reserved
8	Reserved	24	Reserved
9	Reserved	25	Reserved
10	Intermodal Container	26	Reserved
11	Reserved	27	Chassis
12	Reserved	28	Reserved
13	Reserved	29	Reserved
14	Non-Revenue	30	Reserved
15	Reserved	31	Reserved

1.2 Tag Type: The Tag Type indicates the configuration, capability, and memory size of the Tag. At the present time there is only one Tag Type defined, as indicated in Table C.

Table C: Data Values for the Tag Type Field

<u>Decimal Value</u>	<u>Description</u>
1	Reserved
2	Tag described by the AAR Standard (Current Version), the ISO Draft International Standard DIS 10374, and the Proposed ATA Standard
3	Reserved
4	Reserved

To code the Tag Type value into the Tag, the decimal value is reduced by one and converted to its base 2 equivalent.

1.3 Owner's Code: The Owner's Code is composed of four letters and can be represented as C1; C2; C3; C4. To code this information in the Tag, the possible letters represented by C1 will be assigned to the following decimal values: A=0, B=1, C=2, ..., Z=25. The letters C2, C3 and C4 will be assigned the following values: Blank =0, A=1, B=2, ..., Z=26. This code assignment allows for a Owner's Code of less than four characters, with the actual characters left justified, and the remainder of the field padded with blanks.

Conversion from alpha to numeric would involve the following:

1. Determine the numeric equivalent of characters C1 through C4. This will result in four numeric values; N1 through N4.
2. Convert N1 through N4 into one numeric value by using the formula:

$$\text{Value} = (N1 \times 27^3) + (N2 \times 27^2) + (N3 \times 27) + N4$$

The base 2 equivalent of the decimal number "Value" is stored in the Tag's Owner's Code field.

Conversion from a base 2 tag format back to the four letters would involve the following, where "Value" is the decimal equivalent of the base 2 value in the Owner's Code field.

1. $N1 = \text{Value} / 27^3$ (integer - drop fractions)
2. $N2 = (\text{Value} - (N1 \times 27^3)) / 27^2$ (integer)
3. $N3 = (\text{Value} - ((N1 \times 27^3) + (N2 \times 27^2))) / 27$ (integer)
4. $N4 = \text{Value} - ((N1 \times 27^3) + (N2 \times 27^2) + (N3 \times 27))$

5. Use the letter-to-number assignments referred to above to convert N1 through N4 from a numeric value to its letter equivalent.

1.4 Identification Number: The Identification Number is encoded into the Tag by converting the decimal value from 0 to 999999 to a binary value (a conversion from base 10 to base 2).

1.5 Check Digit: The Check Digit is used as a means of verifying the accuracy of the Owner's Code and Identification Number. The Check Digit is calculated according to an algorithm specified in the International Standards Organization Document 6346: 1984. The Check Digit is encoded into the Tag by converting the decimal value from 0 to 9 to its equivalent base 2 value.

1.6 Length: To encode the Length into the Tag, the decimal value from 0 to 2000 centimeters must be converted to the equivalent base 2 value. The Length is equal to the overall (outside) length of the container.

1.7 Height: This field indicates the container height in centimeters. To encode the container Height into the Tag, the decimal value from 0 to 500 centimeters must be converted to its equivalent base 2 value.

1.8 Width: This field indicates the container width in centimeters. The Width is equivalent to the overall (outside) width of the container. To encode the Width into the Tag, the decimal value from 200 to 300 centimeters is reduced by 200 then converted to its equivalent base 2 value.

1.9 Container Type Code: The Container Type Code is represented by the decimal values from 0 to 127 as defined in the International Standards Organization document ISO 6346-1984 (E), Annex G. To encode the value into the Tag, the decimal value must be converted to its equivalent base 2 value.

1.10 Maximum Gross Weight: The Maximum Gross Weight is measured in 100's of kilograms. To encode the Maximum Gross Weight into the Tag, the decimal value from 45 to 455 must be reduced by decimal 45 then converted to the equivalent base 2 value.

1.11 Tare Weight: The Tare Weight field is indicated in 100's of kilograms. To encode the Tare Weight into the Tag, the decimal value from 0 to 91 is converted to the equivalent base 2 value.

APPENDIX F

7-Bit ASCII Table

7-Bit ASCII Table

Graphic or ASCII Control	Decimal	Graphic or Control	ASCII Decimal	Graphic or Control	ASCII Decimal
NUL	0	,	44	Y	89
SOH	1	-	45	Z	90
STX	2	.	46	[91
ETX	3	/	47	\	92
EOT	4	0	48]	93
ENQ	5	1	49	^(↑)	94
ACK	6	2	50	-(←)	95
BEL	7	3	51	~	96
BS	8	4	52	a	97
HT	9	5	53	b	98
LF	10	6	54	c	99
VT	11	7	55	d	100
FF	12	8	56	e	101
CR	13	9	57	f	102
SO	14	:	58	g	103
SI	15	;	59	h	104
DLE	16	<	60	i	105
DC1 (X-ON)	17	=	61	j	106
DC2 (TAPE)	18	>	62	k	107
DC3 (X-OFF)	19	?	63	l	108
CD4 (TAPE)	20	@	64	m	109
NAK	21	A	65	n	110
SYN	22	B	66	o	111
ETB	23	C	67	p	112
CAN	24	D	68	q	113
EM	25	E	69	r	114
SUB	26	F	70	s	115
ESC	27	G	71	t	116
FS	28	H	72	u	117
GS	29	I	73	v	118
RS	30	J	74	w	119
US	31	K	75	x	120
SP	32	L	76	y	121
!	33	M	77	z	122
"	34	N	78	{	123
#	35	O	79		124
\$	36	P	80	} (Alt Mode)	125
%	37	Q	81	~	126
&	38	R	82	DEL (Rub Out)	127
'	39	S	83		
(40	T	84		
)	41	U	85		
*	42	V	86		
+	43	W	87		
		X	88		

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APPENDIX G

6-Bit ASCII Table

6-Bit ASCII Table

Six-Bit ASCII Character	Decimal Value	Six-Bit ASCII Character	Decimal Value	Six-Bit ASCII Character	Decimal Value
(space)	0	6	22	L	44
!	1	7	23	M	45
"	2	8	24	N	46
#	3	9	25	O	47
\$	4	:	26	P	48
%	5	;	27	Q	49
&	6	<	28	R	50
'	7	=	29	S	51
(8	>	30	T	52
)	9	?	31	U	53
*	10	@	32	V	54
+	11	A	33	W	55
,	12	B	34	X	56
-	13	C	35	Y	57
.	14	D	36	Z	58
/	15	E	37	[59
0	16	F	38	\	60
1	17	G	39]	61
2	18	H	40	^	62
3	19	I	41	_(underline)	63
4	20	J	42		
5	21	K	43		